Representative Task # 2

Scientific Data System Support

For the purposes of costing, assume that this Representative Task runs from Years 1 thru 4 of the contract and the work is to be performed on-site.

Background

The contractor shall support specified data systems within the Solar System Exploration Division, Code 690.

Data centers within the Solar System Exploration Division are tasked to assist a broad range of international researchers with their scientific data requirements. These data services primarily consist of receiving, archiving, and providing on-line access to geodynamic, geomagnetic, geophysical, and atmospheric data, derived products, and related information. International users of the CDDIS download approximately 40M files/5.5 Tbytes each month. Data processing requirements for incoming files include validation of contents, reformatting into designated formats as required, and archive in appropriate directory locations for public access. These files must be archived within minutes of receipt. Incoming files (~1M files/50 Gbytes/month) are cataloged in an online database by extraction of pertinent metadata; tools will be developed for extracting these metadata through web-based user interface. The contractor must understand and be able to work with data and products in community-accepted standard formats (e.g., SP3, RINEX, etc). The staff designs, develops, tests, and validates efficient software to process GNSS, laser ranging, VLBI, and DORIS data and products in a timely manner. All development must protect the mission data integrity in the areas of security and protection against data loss.

All software development, testing, and archive operations are performed on government provided equipment.

Technical Requirements

The contractor shall:

1. Provide data, products, and information to the space geodesy user community on a routine and timely basis. These files include GNSS (GPS and GLONASS currently; Galileo, Compass, others in the future) data, satellite and lunar laser ranging (SLR and LLR) data, VLBI data base experiments, DORIS data, products derived from these data, and information about these data and products.

2. Process all incoming data and generate summaries of data contents using existing or developed software. Catalog incoming files in online database. Provide tools for extracting these metadata through web-based user interface.

3. Be proficient in the use of database management software, particularly MySQL, to create and maintain structures to manage metadata extracted from incoming files.

4. Process any new data and products received for archive in data system as required. Develop new software to validate any new incoming data/product requirements. Provide data quality and summary information for all data processed. Approximately 10 new data sets (e.g., additional sites and or new data types) per month require new software or modifications to existing software.

5. Develop and implement recommendations for metadata management based upon accepted standards while coordinating with other data systems (e.g., EOSDIS, GGOS, GCMD, etc.) as required.

6. Develop enhancements to data system web pages to interface to database metadata.

7. Validate all submitted data files for content and conformity to accepted standards. Extract pertinent metadata and develop database structures to logically store these metadata.

8. Maintain the existing data archiving and processing software in the Linux/UNIX environment.

9. Document all software using NASA best practices. Maintain data system documentation for system operations.